



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,192	09/26/2000	Siegfried Kurt Buss	FAO-0019	5598

7590 03/22/2005

CANTOR COLBURN LLP
55 Griffin Road South
Bloomfield, CT 06002

EXAMINER

SEALEY, LANCE W

ART UNIT PAPER NUMBER

2671

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/670,192

Applicant(s)

BUSS ET AL.

Examiner

Lance W. Sealey

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-18 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-12 and 22-24 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 8,9,20 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 2671

DETAILED ACTION

Allowed and Allowable Subject Matter

1. Claims 10-12 and 22-24 are allowed, and claims 8-9 and 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art anticipates or suggests, in a computer based method featuring smaller files decomposed from a computer aided design file of a model, determining the distance between a surface on said model and said point on a corresponding physical object (claims 8, 10, 20, 22 and 24). Claims 11 and 23 are allowed because they depend on allowed claims 10 and 22, respectively, and claims 9 and 21 are allowable because they depend on allowable claims 8 and 20, respectively.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable by Noble (U.S. Pat. No. 5,392,222) in view of Foley et al., Computer Graphics: Principles and Practice

Art Unit: 2671

Second Edition in C ("Foley").

4. Noble, in disclosing locating a field of view in which selected integrated circuit conductors are unobscured, also discloses, with respect to claim 1, a computer based method comprising:

- decomposing data from a computer aided design file of a model (setup tool **2320**, FIG.22; the data decomposed resided in the layout **2210** and netlist **2215** files),
- saving said decomposed data in a plurality of smaller files (FIG.22 shows the decomposition from the layout and netlist files to the node-index **2240**, poly-index **2245**, multy-index **2250**, net-index **2255** and polygon & trapezoid **2235** files), and
- accessing at least one of said analysis files to analyze the surface geometry of said model (the FINDNET program uses polygon and trapezoid files **2235** to analyze surface geometry; see col.20, ll.1-9).

5. However, Noble does not disclose one of said smaller files as an analysis file which does not contain imaging data, said analysis file containing mathematics representing the model surface. This element is disclosed by the Foley computer graphics textbook. Section 7.1.2, p.288, specifies ingredients of a geographic model: files specifying spatial layout and shape of components (similar to applicants' WIF file **510**, FIG.3), files specifying connectivity of components (similar to applicants' DRE file **520**, FIG.3) and files in which application-specific data values and properties associated with components, such as electrical characteristics or

Art Unit: 2671

descriptive text, reside (this is the group of files in which the applicants' FLC file 620, FIG.3, falls. Supporting this assertion of the examiner's is another statement two paragraphs later: "...a model of a computer network could store the connecting lines explicitly or could recompute them from a connectivity matrix with a simple graph-layout algorithm each time a new view is requested." If the computer network model (or in a case more similar to Noble, the VLSI circuit's physical layout--see Foley, p.288, last sentence before "7.1.2 Geometric Models") recomputes the connecting components using a stored connectivity matrix, then the file in which the connectivity matrix resides is a mathematics file.).

6. Therefore, it would have been obvious to one of ordinary skill in the art at the time this invention was made to have modified the Foley mathematics file in view of the Noble IC modeling software oriented view system by incorporating the Foley math file with the connectivity matrix, and the Foley algorithm for recomputing connectivity of components, into the Noble software. Such a modification to Noble would save space (Foley, Section 7.1.2, p.288, last paragraph).

7. Concerning claims 2 and 14, Noble discloses said at least one of said analysis files does not substantially contain data required to display an image of said model (col.20, ll.3-5).

8. Regarding claims 3 and 15, Noble discloses said at least one of said analysis files consists of data required to analyze said surface geometry (col.20, ll.1-9).

9. With respect to claims 4 and 16, Noble discloses at least one of said smaller files

Art Unit: 2671

comprises imaging data (col.19, ll.65-68).

10. Concerning claims 5 and 17, Noble discloses at least one of said smaller files does not substantially contain data required to analyze said surface geometry (technology file **2225**, FIG.22, and col.20, ll.11-12).

11. Finally, claim 13 is rejected in a manner similar to claim 1 except that claim 13 discloses a medium including machine-readable computer program code for managing computer aided design data, the medium including instructions for causing a computer to implement a method. These elements are disclosed in FIG.22 (Findnet routine **2275**) and FIG.23 (Lineindex routine **2310** and Findindex routine **2310**).

12. Therefore, in view of the foregoing, claims 1-5 and 13-17 are rejected as being unpatentable under 35 U.S.C. 103(a) by Noble and Foley.

13. Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable by Noble in view of Benson et al. ("Benson", U.S. Pat. No. 6,556,206).

14. With respect to claim 6, in a manner similar to the rejection of claim 1, Noble discloses decomposing data from a computer aided design file of a model (setup tool **2320**, FIG.22), saving said decomposed data in a plurality of smaller files (FIG.22 shows the decomposition from the layout and netlist files to the node-index **2240**, poly-index **2245**, multy-index **2250**, net-index **2255** and polygon & trapezoid **2235** files), and accessing at least one of said analysis files to analyze the surface geometry of said model (the FINDNET program uses polygon and trapezoid

Art Unit: 2671

files 2235 to analyze surface geometry; see col.20, ll.1-9). However, Noble does not disclose at least one of said smaller files comprises a list of specified surfaces on said model and data relating to the smallest possible three-dimensional region that can enclose each specified surface.

These elements are disclosed in Benson at col.3, ll.54-64. The “smaller file” is the sphere containing the objects in the scene. It is at least obvious that objects in a scene would have order and would naturally comprise a “list of specified surfaces”.

15. Therefore, it would have been obvious to one of ordinary skill in the art at the time this invention was made to have modified the Noble IC modeling software in view of the Benson method of automated viewpoint selection. Such a modification to Noble would facilitate the task of defining a set of viewpoints for a given scene of 3D objects (Benson, col.1, ll.51-52).

16. Rejecting claim 18 in a manner similar to claim 13, Noble discloses decomposing data from a computer aided design file of a model, saving said decomposed data in a plurality of smaller files, and accessing at least one of said analysis files to analyze the surface geometry of said model, and Benson, in a manner similar to the rejection of claim 6, discloses at least one of said smaller files comprises a list of specified surfaces on said model and data relating to the smallest possible three-dimensional region that can enclose each specified surface.

17. Therefore, in view of the foregoing, claims 6 and 18 are rejected as being unpatentable under 35 U.S.C. 103(a) by Noble and Benson.

Response to Remarks

Art Unit: 2671

18. The applicants first assert that there is insufficient motivation to combine Noble with Foley to reject claim 1.

19. We now review the standard for what constitutes a proper motivation, which is part of the general standard to establish a *prima facie* case of obviousness. MPEP 2143 (May 2004 revision) requires three criteria:

- (1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
- (2) There must be a reasonable expectation of success; and
- (3) The prior art references (or references when combined) must teach or suggest all the claim limitations.

Concerning prong (1) above, MPEP 2143.01 sets out several concerns to be considered in deciding whether a motivation is proper:

THE PRIOR ART MUST SUGGEST THE DESIRABILITY OF THE CLAIMED INVENTION

The motivation stated by the examiner for combining Foley with Noble was the conservation of space; furthermore, this motivation was in the Foley reference. MPEP 2143 only requires that a motivation be provided; MPEP 2143 does not provide a guideline for degrees of motivation--whether a motivation is sufficient or insufficient.

WHERE THE TEACHINGS OF THE PRIOR ART CONFLICT, THE EXAMINER MUST WEIGH THE SUGGESTIVE POWER OF EACH REFERENCE

Art Unit: 2671

This consideration does not apply because Foley does not specifically teach the undesirability of using the Noble software, and vice versa.

FACT THAT REFERENCES CAN BE COMBINED OR MODIFIED IS NOT SUFFICIENT TO ESTABLISH *PRIMA FACIE* OBVIOUSNESS
FACT THAT THE CLAIMED INVENTION IS WITHIN THE CAPABILITIES OF ONE OF ORDINARY SKILL IN THE ART IS NOT SUFFICIENT BY ITSELF TO ESTABLISH *PRIMA FACIE* OBVIOUSNESS

In the rejection of claims 1-5 and 13-17 above, the examiner has not just demonstrated that Foley and Noble can be combined or modified, or that it would have been obvious to a person skilled in the art at the time this invention was made to have modified Noble with Foley; he has also supplied a motivation for combining Noble and Foley.

THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE
THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE

The use of the Foley mathematics file does not stop the Noble software from providing CAD design services, and it does not change the principle behind the Noble software's process of providing CAD design. Even if what the applicants assert is true, that the Noble invention's use of a mathematics file would require additional processing, no one knows whether the savings in space (the examiner's stated motivation for combining Foley with Noble) would overcome any additional processing, and this prong of MPEP 2143.01 does not require such an analysis. All these prongs require is that Foley not render Noble unsatisfactory for Noble's intended purpose,

Art Unit: 2671

and that Foley not change the principle by which Noble operates. The Foley mathematics file does not clearly render Noble unsatisfactory for Noble's intended purpose, and Foley does not change the principle by which Noble operates because Noble features a series of files in its operation, and the Foley mathematics file is also a file.

With respect to prong (2) of MPEP 2143, the applicants asserted that (1) there was no indication that the Noble system could determine probe placement using a mathematical representation of the surface; (2) it was not clear that the mathematical files taught by Foley could be used to provide "visible" layer information to locate probing nets; and therefore (3) there was simply no expectation of success that the mathematical files in Foley could be used in Noble for the findnet program. However, with respect to the applicants' concern (1), as stated in items 5 and 6 above, Foley is used to fulfill the claim limitation "one of said smaller files as an analysis file which does not contain imaging data, said analysis file containing mathematics representing the model surface." According to the applicants' claim 1, if the Foley file is a file that contains mathematics that aids in representing the model surface, it can be called an "analysis" file, or whatever anyone wants to call it, and it fulfills claim 1. Claim 1 does not require that the Foley file be engaged in analysis, or in (1) determining probe placement using a mathematical representation of the surface, or in (2) providing visible layer information to locate probing nets; the Noble files are engaged in analysis. The Foley file is supposed to aid in representation of the model surface. Therefore, (3) there is an expectation of success that the

Art Unit: 2671

mathematical files in Foley could be used in Noble to graphically represent data used by the findnet program. Therefore, since all of the considerations in MPEP 2143 support the combination of Foley with Noble to reject claims 1-5 and 13-17, the rejection of claims 1-5 and 13-17 still stand.

20. With respect to the applicants' assertion that Benson does not teach "a list of specified surfaces on said model and data relating to the smallest possible three-dimensional region that can enclose each specified surface", Benson does indeed teach "a list of specified surfaces" (objects in the minimum bounding sphere, col.3, ll.57-58--a collection of objects is a "list") "on said model" (the full scene, col.3, l.55) "and data" (the Benson list of polygons is merged with the Noble multy-index references in the Noble poly-index file) "relating to the smallest possible three-dimensional region that can enclose each specified surface" (Benson, col.3, ll.57-58).

21. Therefore, since the rejection has not been changed for the claims that were amended, **THIS ACTION IS MADE FINAL**. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

22. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR

Art Unit: 2671

1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the Office should be directed to the examiner, Lance Sealey, whose telephone number is (703) 305-0026. He can be reached from 7:00 am-3:30 pm EST Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798.

Any response to this action should be mailed to:

MS AF

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Sixth Floor (Receptionist).

Art Unit: 2671

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Mark Zimmerman', with a long horizontal flourish extending to the right.

MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600